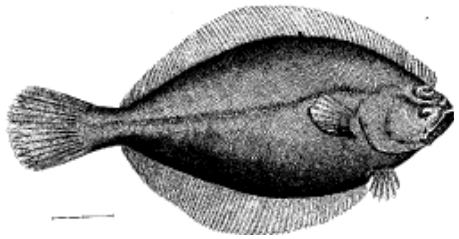

Last Revised: January 2000

Summary Status

Landings and Abundance Trends

Landings Data

American Plaice

by

Loretta O'Brien

The American plaice or dab, *Hippoglossoides platessoides*, is a large-mouthed, "right-handed" flounder, distributed along the Northwest Atlantic continental shelf from southern Labrador to Rhode Island in relatively deep waters. Off the U.S. coast, the greatest commercial concentrations exist between 90 and 182 m (50 and 100 fathoms). Maturation begins between ages 2 and 3 but most individuals do not reach sexual maturity until age 4. Spawning occurs in spring, generally during March through May. Growth is rather slow; 3-year-old fish are normally between 22 and 28 cm (9 to 11 in.) in length, and weigh between 90 and 190 g (0.2 to 0.4 lb). After age 4, females grow faster than males.

The principal commercial fishing gear used to catch American plaice is the otter trawl. Recreational and foreign catches are insignificant. The U.S. fishery is managed under the New England Fishery Management Council's Northeast Multispecies Fishery Management Plan (FMP). Under this FMP American plaice are included in a complex of 15 groundfish species which has been managed by time/area closures, gear restrictions, minimum size limits, and, since 1994, direct effort controls including a moratorium on permits and days-at-sea restrictions under Amendments 5 and 7 to the FMP. Amendment 9 established biomass rebuilding targets, and defines control rules which specify target fishing mortality rates and corresponding rebuilding time horizons. The goal of the management program is to reduce fishing mortality to levels which will allow stocks within the complex to initially rebuild above minimum biomass thresholds, and, ultimately, to remain at or near target biomass levels.

Landings of American plaice increased from an annual average of 2,300 mt during 1972-1976 to an average of 12,700 mt per year during 1979-1984. Subsequently, annual landings declined and since 1991 have ranged between 3,700 mt and 6,400 mt. Total commercial landings in 1998 were 3,700 mt, 8% less than in 1997 (4,000 mt). Between 1960 and 1974, 67% of U.S. landings were from deepwater areas on Georges Bank. Since then, Gulf of Maine landings have greatly exceeded those from Georges Bank.

The U.S. commercial catch per unit effort (CPUE) index was relatively stable between 1964 and 1971, declined in the mid-1970s, and then sharply increased to a record high in 1977, when total landings doubled. The CPUE index steadily declined from1981 to 1988 and has since fluctuated but remained relatively stable through 1997. Values for 1998 are currently unavailable.

Abundance and biomass indices from NEFSC autumn bottom trawl surveys reached record-low values in 1987, but increased through 1990 as the strong 1987 year class recruited to the survey gear. Indices declined in 1991, but increased through 1994, with record high catches of 2-year-old fish from the 1992 year class. Indices subsequently declined during 1995-1997 and increased slightly in 1998. Autumn survey data for 1998 indicate that the 1997 year class is similar in size to the 1992 year class.

Fishing mortality on fully recruited ages (5-8) steadily increased from 1990 (F= 0.40, 30% exploitation rate) to a record high in 1995 (F=0.75, 48% exploitation rate) and subsequently declined in 1996 (F=0.52) and 1997 (F=0.47). For 1998, fishing mortality was projected to be 0.32 (25% exploitation rate). Thus, overfishing was occurring on this stock as F_{1998} was higher than $F_{THRESHOLD} = 0.09$, the overfishing definition reference point established for 1998 under Amendment 9 to the FMP.

Spawning stock biomass steadily declined from 49,200 mt in 1980 to 7,800 mt in 1989. During 1990-1992, spawning stock biomass increased to 13,000 mt as the strong 1987 year class began to recruit to the spawning stock. Spawning stock biomass has remained relatively stable in recent years and was projected to be 14,400 mt in 1998. The stock remains at a relatively low biomass level but is not considered to be overfished as current SSB is above the minimum spawning biomass threshold of $^1/_4$ $SSB_{MSY} = 6,050$ mt.

Discard estimates for American plaice indicate that discarding is highest on age 2 and 3 fish in the northern shrimp fishery. In the large-mesh otter trawl fishery, discarding was highest on age 3 and 4 fish early in the time series and has shifted to age 4 and 5 fish since 1992. Since 1989, discarded fish have accounted for 40–60% of the total catch in numbers and 15-40% of the total catch in weight. Discarding in the shrimp fishery, however, has been reduced since introduction of the Nordmore grate in April of 1992.

The Gulf of Maine-Georges Bank American plaice stock is at a relatively low biomass level and overfishing has been occurring. Stock rebuilding to SSB_{MSY} will be dependent upon low fishing mortality and improved recruitment.

For further information

NEFSC [Northeast Fisheries Science Center]. In press. Report of the SAW Northern Demersal Working Group. Intersessional Meeting - July, 1999. Assessment of 11 Northeast Groundfish stocks through 1999. Northeast Fish. Sci. Cent. Ref. Doc.

NEFSC [Northeast Fisheries Science Center]. 1999. [Report of the] 28th Northeast Regional Stock Assessment Workshop (28th SAW). Northeast Fish. Sci. Cent. Ref. Doc. 99-07. 304 p.

O'Brien, L., R.K. Mayo, and C. Esteves 1999. Assessment of American plaice in the Gulf of Maine - Georges Bank Region for 1998. Northeast Fish. Sci. Cent. Ref. Doc. 99-09. 96p.

Sullivan, L.F. 1982. American plaice, *Hippoglossoides platessoides*, in the Gulf of Maine. University of Rhode Island (Kingston). Master's Thesis.

Summary Status

Long-term potential catch (MSY)	=	4,400 mt
Spawning biomass corresponding to MSY	=	SSB_{MSY} = 24,200 mt
Minimum spawning biomass threshold	=	$^1/_4$ SSB_{MSY} = 6,050 mt
Spawning stock biomass in 1998	=	14,400 (Implies stock was not overfished)
F_{MSY}[1]	=	0.19
F_{TARGET}[2]	=	0.11
$F_{TARGET98}$	=	0.02
Overfishing definition	=	$F_{THRESHOLD98}$[3] = 0.09
F_{1998}	=	0.32 (Implies overfishing was occurring)
Age at 50% maturity	=	3.0 years, males 3.6 years, females
Size at 50% maturity	=	22.1 cm (8.7 in.), males 26.8 cm (10.6 in.), females
Assessment level	=	Age structured
Management	=	Northeast Multispecies FMP

M = 0.2 **$F_{0.1}$ = 0.19** **F_{max} = 0.35** **$F_{THRESHOLD}$ = 0.19**

[1] $F_{0.1}$ is a proxy for F_{MSY}

[2] When SSB exceeds SSB_{MSY}, 60% of $F_{0.1}$.

[3] When SSB is greater than SSB_{MSY}, $F_{THRESHOLD}$ = $F_{0.1}$ = 0.19 ; when SSB is between SSB_{MSY} and $^1/_4$ SSB_{MSY} then $F_{THRESHOLD}$ = maximum F that allows rebuilding to SSB_{MSY} within 10 years; when SSB is less than $^1/_4$ SSB_{MSY} , $F_{THRESHOLD}$ = 0.0.

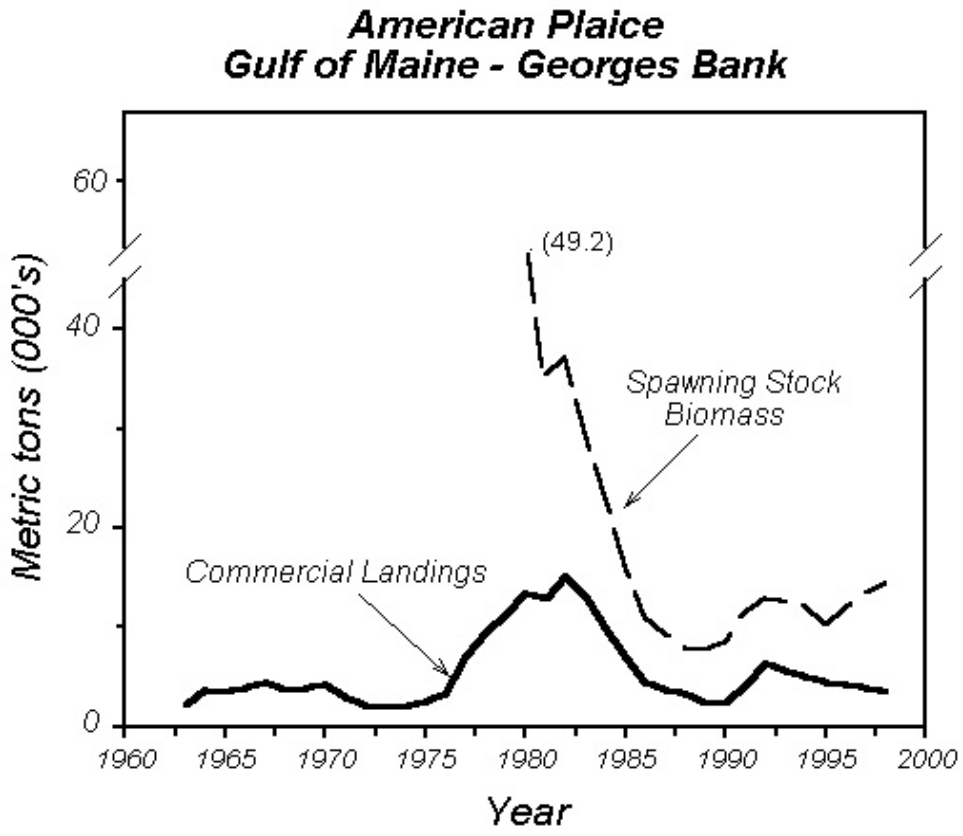

Table 9.1 Recreational and commercial landings (thousand metric tons)

		Year									
Category	**1979-88 Average**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States	9.5	2.4	2.4	4.3	6.4	5.7	5.1	4.6	4.4	3.9	3.7
Canada	<0.1	0.1	0.1	0.0	<0.1	0.0	<0.1	<0.1	<0.1	0.1	<0.1
Other	<0.1	-	-	-	-	-	-	-	-	-	-
Total nominal catch	9.5	2.5	2.5	4.3	6.4	5.7	5.1	4.6	4.4	4.0	3.7